Assignment-4

Consider a square cylinder in a channel as shown in Figure 1.

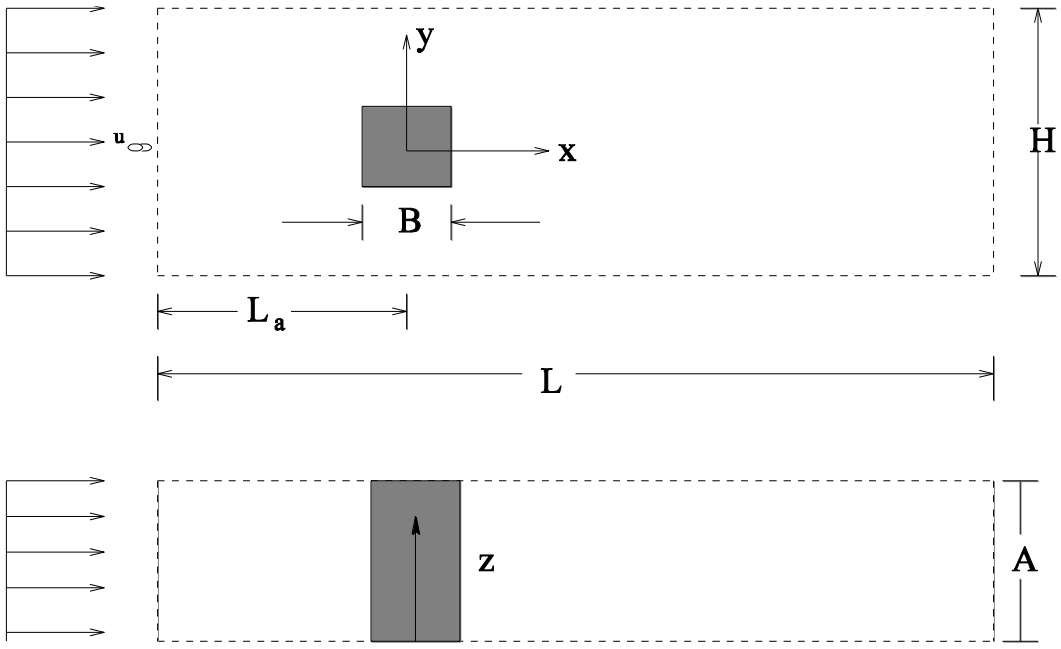

Figure 1

For this assignment consider a 2D flow and neglect the dimensions in the z – direction.

Following are the relevant dimensions:

B = 1.0, H = 10.0, L_a = 7.5, L = 18.0.

The velocity profile is uniform at the inflow plane. Use 178×82 grids and solve complete Navier-Stokes equations on the 2D domain using SIMPLE algorithm. The Reynolds numbers of interest are: 24 and 40. Compare the structure of wake-zone with Figure-2 (only for the Reynolds numbers of 24 and 40). The characteristics dimension in Reynolds number is B.

[10]

Now change B/H as 0.25 and compare the wake structure with Figure-3 for a Reynolds number of 162

[5]

Together with the results, you have to submit the <u>code and the script of running the code.</u>

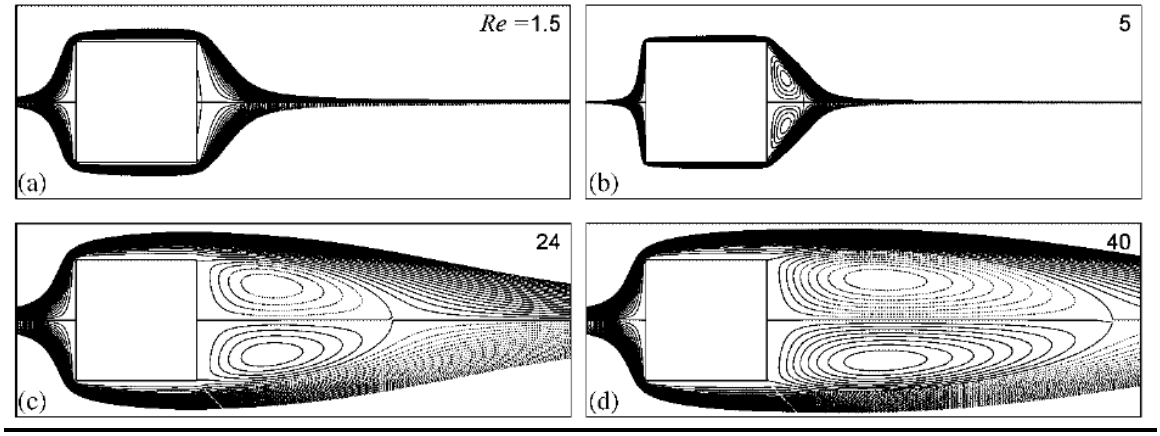

Figure 2

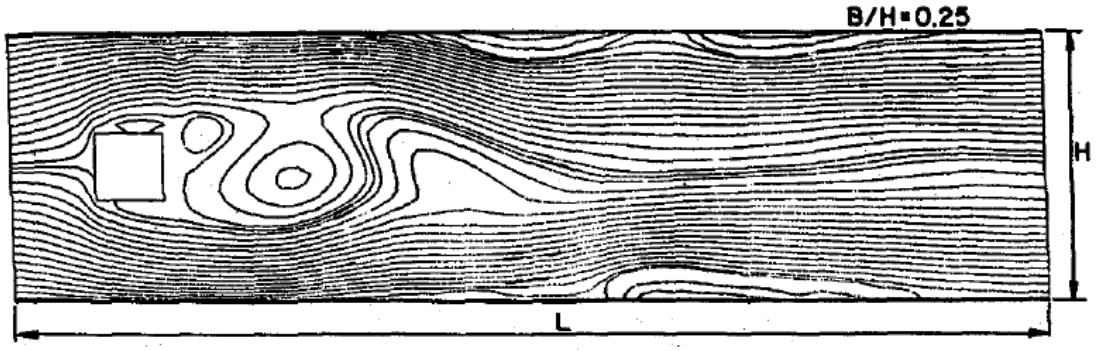

Figure 3